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CHAPTER 9

Trends in Unemployment Benefit Financing

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State unemployment insurance (UI) programs in the middle of the 1990s have aggregate trust fund balances totaling more than \$30 billion. Most state UI programs passed through the 1990-1992 recessionary period without needing to borrow from the U.S. Treasury. This stands in sharp contrast to the recessions of 1973-1975, 1980, and 1981-1982, when borrowing was widespread and large-scale and indebtedness extended over multi-year periods.

This chapter reviews the history of UI trust fund financing with particular attention to recent developments. It is divided into six main sections. The first provides a long-run overview of UI trust fund reserves from the program's inception through the mid-1990s. The next section reviews the history of borrowing and loan repayments with particular attention to changes caused by revised debt repayment provisions of the early 1980s. Without attempting to be definitive, this part also discusses the question of trust fund adequacy and some common measures of trust fund adequacy. The third section introduces the topic of flexible financing as a benefit funding strategy. Individual elements of flexible financing are identified and their growth and prevalence are described. The fourth section undertakes several investigations of flexible financing. These help in an assessment of its overall quantitative

importance. The fifth section discusses policy implications of flexible financing, and the final section provides a summary and conclusions.

The main conclusions of the chapter can be stated quite simply.

1. The state UI trust funds are now more healthy than at the end of the 1970s and start of the early 1980s, but not so large that the risks of insolvency and debt are merely matters of historical interest. The fact that borrowing during 1990-1994 was so modest is partly attributable to the mild nature of the recession.
2. There is a continuing need for states to maintain reserves to avert large-scale borrowing during a future recession. We note and express concern for the comparatively modest pace of trust fund rebuilding during 1993-1994. It appears likely that reserves available for the next recession will be less adequate than they were prior to the 1990-1992 recession.
3. While flexible financing provisions are now more prevalent in UI, we were not able to demonstrate an increased quantitative importance of such provisions compared to the situation, for example, twenty years ago.
4. The speed and strength of automatic financing responses built into current UI statutes appear inadequate to the needs that would arise in a future downturn if its depth and severity equaled the average of the eight post-World War II recessions.

Trends in Aggregate Unemployment Insurance Reserves

Following the establishment of state UI programs in 1937, the history of aggregate trust fund reserves falls into three distinct periods. Sustained and large accumulations occurred during the earliest years. This was caused by two factors: lower benefit costs than originally anticipated and the effects of full employment during World War II. As a fraction of covered payrolls, aggregate reserves reached their all-time peak at the end of 1945 (10.4 percent). Modest absolute growth in

reserves continued through the end of 1948, when the \$7.60 billion total represented 7.91 percent of covered payrolls.

These years of trust fund accumulations clearly were helped by the strong macroeconomic environment associated with World War II. Aggregate benefit payments, which had averaged about 1.5 percent of covered payrolls during 1938-1940, averaged only about 0.5 percent of payrolls during 1941-1945, with payout rates especially low during 1943 and 1944. Despite large reductions in average tax rates (from 2.69 percent of payrolls in 1938 to 1.50 percent in 1945), tax revenues exceeded benefits in every year through 1945.

The early years of the program also witnessed changes that effectively increased the average duration of benefits. In the initial years of UI, nearly all states imposed a two- or three-week waiting period and limited the maximum benefit duration to 15 or 16 weeks.¹ These limitations were premised on actuarial expectations that benefit payouts would average 3 percent of payrolls. In fact, actual payout rates during this period were much lower, especially during World War II. As experiences with low payout rates persisted, states modified their laws to shorten the waiting period and to lengthen maximum duration. These changes occurred mainly in the 1940s and 1950s.

During the thirty-two years from 1948 to 1979, growth in UI trust fund reserves lagged substantially behind the growth in the economy. Table 9.1 helps illustrate this situation, showing aggregate net reserves, covered payrolls, and net reserves as a percentage of payrolls (commonly termed the reserve ratio) for selected years.² Of the nine individual years displayed in the table the first eight represent prerecession years for the individual post-World War II recessions, with the back-to-back recessions of 1980-1983 and 1990-1992 treated as single episodes. The most interesting feature of the 1948-1979 period is the continuous decline in aggregate reserves measured as a percentage of payrolls, from 7.91 percent in 1948 to 0.91 percent in 1979. Even during the long continuous expansion of the 1960s, when aggregate reserves nearly doubled, growing from \$6.67 billion to \$12.64 billion, there was a small decline in net reserves relative to total payrolls.

Since state trust funds were so large at the start of the 1948-1979 period, the decline in reserves did not present financing problems for many states until the mid-1970s. Alaska, Michigan, and Pennsylvania

were the only states that obtained loans to finance benefits during the 1950s and 1960s. All of these loans were fully repaid by the late 1960s.

Table 9.1 Aggregate UI Trust Fund Reserves for Selected Years, 1948 to 1994

Year	End-of-year net trust fund balance	Annual covered payrolls	Net reserves as a percentage of payrolls
1948	7 603	96.1	7.91
1953	8.913	139.2	6.41
1957	8.659	173.6	4.99
1959	6.674	186.9	3.57
1969	12.636	365.7	3.46
1973	10.882	510.0	2.13
1979	8.583	938.4	0.91
1989	36.871	1,918.0	1.92
1994	31.344	2,368.5	1.32

SOURCE Data from the U S Department of Labor, Unemployment Insurance Service Data on reserves measured in billions of dollars Data refer to all fifty-three programs. Payroll data for 1994 are preliminary

Substantial drawdowns of state trust funds occurred in the early 1970s. The first states to require loans were Connecticut, Vermont, and Washington during 1972-1974, with reductions in defense-related procurement causing especially high unemployment in both Connecticut and Washington during 1970-1972.

Large-scale borrowing from the U.S. Treasury first became widespread in 1975 as the 1974-1975 recession caused financing problems for many states. Nearly half of all UI programs required loans during 1975-1978, and total borrowing exceeded \$5.0 billion. Furthermore, the post-1975 recovery was not sufficiently robust to fully restore trust fund balances by the end of the 1970s. Note in table 9.1 that net reserves at the end of 1979 totaled only \$8.58 billion, about \$2.3 billion less than at the end of 1973. The reserve ratio at the end of 1979 was only 0.91 percent, roughly one-fourth of the reserve ratio at the end of 1969, and the lowest prerecession reserve ratio shown in Table 9.1.

Because state programs entered the 1980-1983 recessionary period with historically low reserves, borrowing was even more widespread and of larger scale during the early 1980s than in the previous decade. Table 9.1 shows that substantial net trust fund accumulations occurred between 1979 and 1989. This ten-year interval is appropriately divided into an initial four years of recession (1980-1983) followed by six years of substantial trust fund building. Net reserves were actually negative at the end of 1983 (-\$5.8 billion, not shown in table 9.1) so that the 1984-1989 period had a total accumulation of more than \$42 billion.

Despite the reserve buildup of 1984-1989, note in table 9.1 that the 1989 net reserve balance of \$36.87 billion represented only 1.92 percent of covered payrolls. As a fraction of covered payrolls this level was only slightly more than half the levels of 1959 and 1969 and somewhat smaller than the balance at the end of 1973. Despite net reserves being relatively lower in 1989 than in 1973, state borrowing during the most recent recession was much smaller than during the mid-1970s. A discussion of the contrasting pattern of borrowing in the two periods is reserved for the next section.

The final aspect of table 9.1 to note is the aggregate reserve position of the states at the end of 1994. Net reserves of \$31.34 billion represented 1.32 percent of covered payrolls, roughly midway between the reserve levels of 1979 and 1989 when measured as a percent of covered payrolls. The \$31.34 billion represents an increase of \$5.50 billion in net reserves from two years earlier, the low point of the most recent recession. It should be noted that the \$2.75 billion annual rate of trust fund accumulations during 1993 and 1994 stands in contrast to an annual accumulation rate that averaged \$7.0 billion during 1984-1989. If one were to speculate on the net reserve position of the states at the start of the next recession, it would appear that reserves will be smaller relative to covered payrolls than they were prior to the 1990-1992 recession.

To summarize, the history of aggregate net reserves since the inception of unemployment insurance falls into three periods: (1) 1937-1948—substantial reserve accumulations; (2) 1948-1979—substantial losses of reserve adequacy; and (3) 1979 to the present—trust fund building, although the high point of the period (1989) did not reach the level of 1973. Furthermore, based on data from 1993 and 1994, recent

reserve accumulations have occurred at a substantially slower pace than during the 1984-1989 period. This has obvious implications for potential borrowing by the states during the next recession.

A Brief History of State Borrowing

Funding Concepts

Revenues that fund regular state UI programs are obtained mainly from payroll taxes on covered employers. Tax receipts are deposited into state UI trust fund accounts maintained at the U.S. Treasury. These accounts are the source for benefit payments to eligible claimants.

The funding strategy for regular UI is usually characterized as pre-funding (or advance funding or forward funding). Trust fund balances are built up prior to recessions, drawn down during recessions, and then rebuilt during the subsequent recoveries. This funding arrangement means that the program acts as an automatic stabilizer of economic activity, i.e., it makes larger injections than withdrawals into the spending streams during recessions and larger withdrawals than injections during economic recoveries. The preceding characterization was less accurate during the recessions of the mid-1970s and the early 1980s because the trust fund balances were not adequate to pay regular UI benefits to all claimants. Large-scale and persistent state borrowing took place.

During the most recent downturn, state UI trust funds were generally adequate to meet demands for benefit payments. For the five full years of 1990 to 1994, only seven states required loans from the Federal Unemployment Account (FUA), the federal trust fund loan account, and only two states (Connecticut and Massachusetts) engaged in "large-scale" borrowing.³ As noted, this recent situation stands in sharp contrast to the recessions of 1974-1975 and 1980-1983. In both earlier periods, borrowing was much more widespread and larger in relative scale.

To place 1990-1994 trust fund borrowing experiences into more of a historical perspective, table 9.2 provides summary data that extend back over the 1970s and 1980s. The top panel in table 9.2 summarizes

Table 9.2 Number of States by High-Cost Multiple and Borrowing Activity

End of year	High-cost multiples (HCMs)						Total	National HCM
	Negative	0.0 - 0.5	0.5 - 1.0	1.0 - 1.5	1.5 - 2.0	2.0+		
1969	0	0	1	16	15	20	52	1.68
1973	1	4	14	12	12	9	52	1.04
1979	9	13	16	12	2	0	52	0.41
1989	0	9	22	18	3	0	52	0.87
State borrowing activities, 1979-1979								
Initial HCMs	1	4	14	12	12	9	52	
States with loans	1	4	12	5	2	0	24	
States with "large" loans	1	4	8	1	1	0	15	
State borrowing activities, 1980-1987								
Initial HCMs	9	13	16	12	2	0	52	
States with loans	8	11	10	2	0	0	31	
States with "large" loans	2	6	5	1	0	0	14	
State borrowing activities, 1990-1994								
Initial HCMs	0	9	22	18	3	0	52	
States with loans	0	4	3	0	0	0	7	
States with "large" loans	0	2	0	0	0	0	2	

SOURCE Data from the U S. Department of Labor, Unemployment Insurance Service. Data exclude the Virgin Islands. Large loans are defined as total borrowing over the indicated periods equal to 1 percent or more of total payrolls for a single year, 1975, 1984, and 1991, respectively

state UI trust fund reserve balances at the end of four separate years: 1969, 1973, 1979, and 1989. These four dates were selected (as in table 9.1) because they precede the onset of recessions and recession-related increases in the demand for UI benefit payments.

The information summarized in table 9.2 involves the concept of the high-cost multiple (HCM), also known as the reserve ratio multiple. This is a UI actuarial concept that assesses state reserve adequacy by taking into consideration three important factors pertinent to the state: the balance in its UI trust fund, the scale of its economy, and its own past experiences in paying UI benefits. The denominator in the HCM is the highest cost benefit payout period in the state's history. This is total benefit payout over a twelve-month period expressed as a percentage of covered wages for the same period. The interstate range of high-cost percentages extends from a low of 1.04 percent (in South Dakota between January and December 1964) to a high of 4.37 percent (in Rhode Island between January and December 1975). The highest cost period for the U.S. as a whole was 2.24 percent (between January and December 1975).

The numerator of the HCM, the reserve ratio, is the end-of-year trust fund balance divided by covered wages for the year and expressed as a percentage.⁴ The ratio of these two ratios, the HCM, is thus a measure whose numerator incorporates information on both the UI trust fund balance and the on scale of the state's economy (as approximated by covered wages) while the denominator is a measure of risk, the highest previous twelve-month payout rate.

In the past, some have advocated that states build trust fund reserves to levels that produce an HCM of 1.5. This level implies that the fund balance would equal eighteen months of benefits if paid out at the historically highest payout rate. As a measure of trust fund adequacy, the HCM has its critics. Many practitioners feel that the 1.5 HCM is too conservative as a standard, i.e., that a prudent state could function with a much lower trust fund balance with little or no risk of fund insolvency.⁵

While trust fund financing has been practiced since the inception of UI, there is no consensus over the appropriate measure of trust fund adequacy. The recently disbanded Advisory Council on Unemployment Compensation (ACUC) examined funding issues in its February 1995 Report.⁶ Chapter 5 of the report analyzed the funding situation of

the states as of the end of 1993 under three alternative potential solvency standards. Table 5.3 in the report shows the number of states meeting HCM solvency standards ranging from 0.25 to 1.75 using seven measures of high costs: one involving the highest twelve-month costs ever experienced, three involving the highest twelve-month cost periods over the past ten years and three involving the highest twelve-month cost periods over the past twenty years.

The ACUC recommended that states meet an HCM standard of 1.0, where the state's high cost rate is measured as the average of the three highest-cost twelve-month periods over the past twenty years. The ACUC also recommended that the federal partner provide four specific financial incentives to the states to meet forward funding goals, e.g., preferential interest rates for achieving large balances and lower interest rates on recession-related borrowing if prerecession balances equaled or exceeded solvency standards.⁷ The ACUC's financing recommendations, if instituted, would improve the solvency of many state UI programs.

Summary of State Borrowing

Because UI trust fund balances were so large during the initial post-World War II decades, there was a very limited need for state borrowing from the U.S. Treasury. As noted, just three states, Alaska, Michigan and Pennsylvania, required loans before 1970, and only Alaska actually used its loans to pay benefits. These loans were secured mainly during 1958 and 1959, and repayments were completed during 1967 and 1968.

The post-1970 experiences have been much different. The top panel of table 9.2 displays the distribution of HCMs prior to the four most recent economic downturns.⁸ Each row shows multiples for fifty-two UI programs (all except the Virgin Islands). The final entry for each row is the national HCM. From this last column as well as from the distributions of state multiples, it is clear that reserves were most ample at the end of 1969 and lowest at the end of 1979. Between 1979 and 1989, most states increased reserves substantially, and the national high-cost multiple roughly doubled, increasing from 0.41 to 0.87.

The lower three panels in table 9.2 then summarize state borrowing experiences in the three most recent downturns. Each panel shows how

many states needed loans and how many needed “large” loans, i.e., loans that totaled 1.0 percent or more of covered payrolls. The twenty-four states that needed loans during 1974-1979 borrowed a total of \$5.5 billion. Between 1980 and 1987, a total of \$24.0 billion was borrowed by thirty-one programs. In contrast, borrowing by seven states during 1990-1994 totaled only \$4.4 billion, less in absolute value than during 1974-1979. The comparative scale of borrowing during the three recessionary episodes is vividly illustrated when total loans are expressed as a percentage of payrolls for one year during each period: 0.95 percent during 1974-1979, 1.75 percent during 1980-1987, but only 0.21 percent during 1990-1994.⁹ Table 9.2 also shows the number of states needing large loans during the three episodes. These respective counts are fifteen, fourteen and two.

The purpose of prefunding (or advance funding) UI programs is to have adequate reserves in the state trust funds to make benefit payments during recessions without resorting to borrowing (or at least large-scale borrowing). By ranking states according to their HCMs, the bottom panels of table 9.2 provide a convenient summary of the prevalence of borrowing according to an indicator of prerecession reserve adequacy. In each episode, borrowing and large-scale borrowing were most prevalent among states with low prerecession fund balances. States with HCMs of 1.0 or larger generally have been successful at avoiding borrowing. Conversely, those with multiples below 0.5 have been most likely to need loans and to need large loans.

Table 9.2 also illustrates that the 1.5 HCM guideline is not a fool-proof indicator of reserve adequacy. There have been states that entered recessions with multiples above 1.5 that subsequently needed loans. Conversely, not all states with prerecession multiples below 0.5 have needed loans. However, for identifying states at risk of needing loans and of needing large loans, the HCM is a useful indicator.¹⁰

An interesting contrast emerges when borrowing during the 1980-1987 and 1990-1994 periods is compared. For HCMs in the 0.0 to 0.5 and 0.5 to 1.0 ranges, note that the proportions that borrowed were much lower during 1990-1994 than during 1980-1987. In addition, the proportions needing large loans were also much lower during 1990-1994.¹¹ One important reason for reduced borrowing activity among states with comparable prerecession HCMs was the relative mildness

of the recent downturn when compared to the back-to-back recessions of the early 1980s.

Borrowing Provisions

State UI programs are required to make timely payments to eligible claimants regardless of current balances in their trust fund accounts held at the U.S. Treasury. If state reserve balances are inadequate there are statutory provisions for borrowing from the Treasury. These provisions, in Title XII of the Social Security Act, are important to review.

Treasury loans for purposes of making benefit payments are available to states on essentially an as-needed basis. Interest charges accrue if advances are still outstanding after certain mandatory repayment dates. These are levied at the interest rate applicable to medium-term U.S. debt but are capped at 10.0 percent. Interest accrues on the average daily indebtedness. States that borrow after January 1 of a given year can avoid interest charges altogether if loans are fully repaid by September 30 of the same year. Loans taken and fully repaid in the same fiscal year are commonly referred to as cash-flow loans.¹²

The states also face debt repayment requirements under Title XII. If debt has been outstanding on January 1st of two consecutive years and has not been fully repaid by November 10th of the latter year, an automatic debt repayment process is activated. On January 1 of the following year, 0.3 percent is added to the federal part of each employer's UI tax obligation under the Federal Unemployment Tax Act (FUTA) tax: i.e., 1.1 percent is levied rather than 0.8 percent on the first \$7,000 of earnings for each employee. The proceeds of the 0.3 percent penalty tax go toward repaying the oldest part of the state's debt. Higher penalty tax rates apply in later years.

Because FUTA penalty taxes are levied at a single flat rate, a state may prefer to make voluntary repayments of experience-rated state UI taxes. These must be levied as new tax obligations (not withdrawals from the state's UI trust fund), and their yield must at least equal the yield of the federal penalty tax. Voluntary repayment can also be accomplished by a special assessment levied on top of regular employer state UI taxes.

Prior to 1982, debt repayment provisions differed from current provisions in several ways. Two especially important contrasts should be

noted: (1) loans did not carry interest charges, and (2) automatic debt repayment through mandatory FUTA penalty taxes was suspended by emergency federal legislation. In short, debt burdens before 1982 were lighter.

The increase in the cost of indebtedness has affected state attitudes towards debt, as shown by their debt repayment behavior.¹³ Debts incurred in the late 1970s were repaid slowly, whereas post-1982 debts were repaid rapidly. Post-1982 debts have often been held for such short periods that no interest has been due.

Tables 9.3A and 9.3B summarize national details on loans, debt and debt repayments from 1972 to 1994. Interest-free and interest-bearing debts are distinguished, with the changeover to interest-bearing advances taking place on April 1, 1982. Note in table 9.3A that borrowing during the 1990s never exceeded \$1.5 billion per year.

Probably the most interesting feature of table 9.3B is the contrast in loan repayment patterns for the two types of loans. Of the \$10.48 billion of interest-free loans, \$6.44 billion (over 60 percent of the total) was repaid as FUTA penalty taxes (credit reductions). In contrast, the fraction was only 1.2 percent (\$0.29 billion) for the interest-bearing advances repaid in this manner with the rest made as voluntary repayments. The vivid contrast in repayment patterns is also indicated by the annual repayment rates for the two types of debt. The all-year weighted averages of the two repayment rates are 14 percent for interest-free debt and 56 percent for interest-bearing debt.

The fast pace of debt repayment, apparent from 1983, has also characterized the loans of the 1990s. Under current debt repayment provisions, debtor states have demonstrated strong sensitivity to interest charges, and the prospect of these charges has led to faster corrective actions by the states.

Changes in state-level patterns of borrowing and loan repayment mean that debts are now held for shorter periods.¹⁴ However, part of the explanation for shorter periods of indebtedness is an increased willingness of states with financing problems to reduce UI benefits even before the economy has recovered from a recession.¹⁵ This greater inclination dates from the early 1980s. Both macro and income distribution considerations suggest this timing of benefit reductions is not appropriate.

Table 9.3A Summary of State UI Debt and Debt Repayment Activities, 1972 to 1994 (\$ billions)

Year	State UI debt, December 31			Loans to states		
	Total	Interest free	Interest bearing	Total	Interest free	Interest bearing
1972	0.07	0.07	NA	0.07	0.07	NA
1973	0.09	0.09	NA	0.03	0.03	NA
1974	0.11	0.11	NA	0.02	0.02	NA
1975	1.59	1.59	NA	1.49	1.49	NA
1976	3.40	3.40	NA	1.85	1.85	NA
1977	4.58	4.58	NA	1.29	1.29	NA
1978	5.09	5.09	NA	0.84	0.84	NA
1979	3.83	3.83	NA	0.05	0.05	NA
1980	4.99	4.99	NA	1.47	1.47	NA
1981	6.27	6.27	NA	1.61	1.61	NA
1982	10.63	7.57	3.07	5.18	1.76	3.42
1983	13.37	6.93	6.40	6.63	NA	6.63
1984	9.49	5.74	3.75	3.01	NA	3.01
1985	6.11	4.54	1.58	2.55	NA	2.55
1986	4.81	3.40	1.41	2.29	NA	2.29
1987	2.05	1.54	0.51	1.23	NA	1.23
1988	0.78	0.78	0.00	0.23	NA	0.23
1989	0.60	0.60	0.00	0.00	NA	0.00
1990	0.42	0.42	0.00	0.00	NA	0.00
1991	1.01	0.42	0.80	0.77	NA	0.77
1992	1.27	0.21	1.06	1.48	NA	1.48
1993	0.19	0.00	0.19	1.37	NA	1.37
1994	0.00	0.00	0.00	0.80	NA	0.80
All years				34.26	10.48	23.78

SOURCE: Based on data from the U.S. Department of Labor, Unemployment Insurance Service.
NA = not applicable.

Table 9.3B Summary of State UI Debt and Debt Repayment Activities, 1972 to 1994 (\$ billions)

Year	Total	Loan repayments ^a			Loan repayment rate ^b		
		Interest free		Interest bearing	Total	Interest free	Interest bearing
		Credit reductions	Voluntary repayments				
1972	0.00	0.00	0.00	NA	0.00	0.00	NA
1973	0.00	0.00	0.00	NA	0.00	0.00	NA
1974	0.00	0.00	0.00	NA	0.00	0.00	NA
1975	0.01	0.01	0.00	NA	0.01	0.01	NA
1976	0.04	0.00	0.04	NA	0.01	0.01	NA
1977	0.11	0.01	0.10	NA	0.02	0.02	NA
1978	0.33	0.00	0.33	NA	0.06	0.06	NA
1979	1.31	0.00	1.30	NA	0.25	0.25	NA
1980	0.31	0.06	0.25	NA	0.06	0.06	NA
1981	0.33	0.32	0.01	NA	0.05	0.05	NA
1982	0.83	0.47	0.00	0.36	0.07	0.06	0.11
1983	3.93	0.63	0.01	3.30	0.23	0.08	0.34
1984	6.84	0.88	0.31	5.65	0.42	0.17	0.60
1985	5.93	0.99	0.21	4.74	0.49	0.21	0.75
1986	3.59	0.80	0.34	2.45	0.43	0.25	0.63
1987	3.99	0.93	0.93	2.13	0.66	0.55	0.81
1988	1.50	0.56	0.20	0.74	0.66	0.49	1.00
1989	0.18	0.18	0.00	NA	0.23	0.23	NA
1990	0.18	0.18	0.00	NA	0.30	0.30	NA
1991	0.18	0.00	0.00	0.18	0.15	0.00	0.23
1992	1.22	0.20	0.00	1.01	0.49	0.49	0.44
1993	2.45	0.21	0.00	2.24	0.93	1.00	0.92
1994	0.98	NA	NA	0.98	1.00	NA	0.99
All years	34.26	6.44	4.03	23.78	0.30	0.14	0.56

SOURCE: See table 9 3A NA = not applicable

a Voluntary repayments accounted for all but \$0.29 billion of interest-bearing loan repayments.

b Annual repayment rates measured as repayments divided by the sum of debt at the start of the year plus loans received during the year. All-year averages are weighted averages of annual repayment rates, where weights are annual loans plus annual start-of-year debt.

State Trust Funds, Borrowing, and Unemployment during 1990-1994

State-level information on UI trust fund reserves and unemployment for 1990-1992 is displayed in table 9.4A. For each of the fifty-three UI programs, the table shows reserves and HCMs at the end of 1989 and 1992 and three-year changes. Also included is a measure of recession-related unemployment growth, i.e., each state's 1990-1992 unemployment rate is shown as a ratio to its 1987-1989 unemployment rate.

Note the national aggregates at the bottom of table 9.4A. Total net reserves declined by about \$11 billion over these three years, and the national HCM decreased by about one-third, from 0.87 to 0.56. At the end of 1992, however, only four states had negative net reserves.

Observe the large drawdowns of reserves in California and New York, both exceeding \$2.5 billion, and the losses in Massachusetts, Connecticut and Pennsylvania. Combined, these five states accounted for \$8.6 billion of reserve losses or 78 percent of the national total.¹⁶ One indicator of the comparative shallowness of the 1990-1992 downturn is the national unemployment rate ratio of 1.156, i.e., the national unemployment rate during 1990-1992 was only 15.6 percent higher than the 1987-1989 prerecession average.

The state-level information can be organized in alternative ways to illustrate different points about recent trust fund reserve losses. Table 9.4A arrays the states according to the level of their 1989 HCMs. During 1991 and 1992, four UI programs borrowed from the FUA: Michigan, Connecticut, the District of Columbia and Massachusetts. Arranging the 1989 state HCMs in ascending order as in table 9.4A, these states ranked 1st, 2nd, 5th, and 8th, respectively. The three other states needing loans during the 1991-1994 period (Missouri, New York, and Maine) ranked 10th, 21st, and 29th, respectively, in table 9.4A. Thus, while borrowing was related to initial reserve balances, it had other determinants as well.¹⁷

One informative way to examine the loss of reserves during 1990-1992 is to note changes in state-level unemployment rates. Table 9.4B rearranges the information from table 9.4A to emphasize recession-related increases in state unemployment. The largest proportional increase in state-level unemployment occurred in New Hampshire, where the 1990-1992 average rate was 6.80 percent while the 1987-1989 average was 2.83 percent, yielding a ratio of 2.400. States are

Table 9.4A Summary of Net Reserves by State, December 1989 and December 1992
(States Arrayed by 1989 High-Cost Multiples)

	Net reserves (\$ millions)			High-cost multiple			Unemployment rates
	Dec. 1989	Dec. 1992	Change	1989	1992	Change	1990-1992/ 1987-1989
Michigan	370	-72	-442	0.13	-0.02	-0.15	1.116
Connecticut	274	-653	-927	0.22	-0.53	-0.75	1.947
Ohio	778	602	-176	0.30	0.21	-0.09	1.037
Arkansas	131	81	-50	0.40	0.20	-0.20	0.934
District of Columbia	76	-19	-95	0.40	-0.09	-0.49	1.405
West Virginia	146	141	-5	0.41	0.35	-0.06	1.019
Louisiana	306	601	295	0.43	0.72	0.29	0.693
Massachusetts	909	-380	-1,289	0.45	-1.08	-0.63	2.236
Illinois	1,268	848	-421	0.47	0.28	-0.19	1.035
Missouri	372	3	-369	0.50	0.00	-0.50	1.028
Minnesota	359	224	-135	0.52	0.27	-0.25	1.093
Pennsylvania	1,616	808	-808	0.55	0.25	-0.30	1.297
Montana	80	96	16	0.63	0.62	-0.01	0.970
South Carolina	415	433	18	0.66	0.60	-0.06	1.154
Kentucky	393	364	-29	0.69	0.54	-0.15	0.877
North Dakota	45	50	5	0.70	0.65	-0.05	0.909
Wyoming	54	110	56	0.71	1.23	0.52	0.756
Texas	989	586	-402	0.73	0.36	-0.37	0.902

Maryland	598	146	-452	0.75	0.17	-0.58	1.387
Colorado	239	339	100	0.75	0.87	0.12	0.796
New York	3,181	214	-2,967	0.76	0.05	-0.71	1.476
Arizona	493	372	-120	0.84	0.55	-0.29	1.037
California	5,419	2,787	-2,633	0.89	0.42	-0.47	1.380
New Hampshire	204	130	-74	0.89	0.55	-0.34	2.400
Tennessee	657	603	-54	0.90	0.69	-0.21	1.041
Nebraska	127	161	34	0.92	0.97	0.05	0.671
Rhode Island	304	104	-199	0.92	0.32	-0.60	2.227
Alaska	180	232	52	0.93	1.06	0.12	1.005
Maine	206	35	-171	0.94	0.15	-0.79	1.632
Georgia	1,018	966	-52	0.96	0.79	-0.17	1.032
Washington	1,364	1,766	402	0.97	0.99	0.02	0.937
Indiana	770	942	171	1.04	1.11	0.07	1.083
New Jersey	2,795	2,440	-355	1.06	0.85	-0.21	1.664
Nevada	321	234	-87	1.12	0.65	-0.47	1.047
Wisconsin	1,041	1,195	154	1.17	1.13	-0.04	1.007
Virginia	718	507	-212	1.17	0.74	-0.43	1.366
Delaware	207	219	11	1.19	1.13	-0.06	1.685
North Carolina	1,471	1,387	-83	1.20	0.98	-0.22	1.362
Iowa	518	615	98	1.20	1.21	0.01	0.943
Alabama	623	550	-72	1.21	0.90	-0.31	0.965
Utah	239	342	104	1.25	1.40	0.15	0.885

(continued)

Table 9.4A (continued)

	Net reserves (\$ millions)			High-cost multiple			Unemployment rates
	Dec. 1989	Dec. 1992	Change	1989	1992	Change	1990-1992/ 1987-1989
Florida	2,041	1,444	-597	1.30	0.80	-0.50	1.345
Oklahoma	323	419	96	1.34	1.53	0.19	0.910
Oregon	804	1,055	251	1.35	1.47	0.12	1.070
Kansas	472	606	134	1.35	1.47	0.12	0.943
Idaho	220	240	20	1.37	1.16	-0.21	0.967
Hawaii	340	362	22	1.40	1.35	-0.05	1.058
New Mexico	174	239	65	1.48	1.69	0.21	0.857
South Dakota	45	50	5	1.49	1.29	-0.20	0.811
Vermont	197	181	-16	1.59	1.37	-0.22	1.783
Mississippi	388	345	-43	1.67	1.26	-0.41	0.916
Puerto Rico	564	749	186	1.82	2.15	0.33	NA
Virgin Islands	28	47	19	1.92	3.21	1.29	NA
U.S. total	36,871	25,847	-11,029	0.87	0.56	-0.31	1.156

NA = not applicable

arrayed in descending order of their unemployment rate ratios in table 9.4B.

A striking feature of the table is the geographic concentration of the increases in unemployment. As noted, the national average increase for 1990-1992 relative to 1987-1989 was 15.6 percent or a ratio of 1.156. There are sixteen states whose unemployment rate ratios exceed the national average. Fifteen of these are located along the eastern seaboard of the United States, and the sixteenth is California.¹⁸

The most dramatic increases in unemployment occurred in New England, whose constituent states occupy the five top rows and the eighth row in table 9.4B. All three Middle Atlantic states had above-average increases, with ratios of 1.664, 1.476 and 1.297 in New Jersey, New York and Pennsylvania, respectively. Of the nine states in the South Atlantic division, six also experienced above-average increases, while a seventh (South Carolina) roughly matched the national average. Thus, Georgia and West Virginia were the only South Atlantic states not to experience a major increase in unemployment during 1990-1992.

Note also in table 9.4B that nineteen states actually had lower average unemployment rates during 1990-1992 than in 1987-1989. An additional twelve states with higher unemployment during 1990-1992 experienced increases that were less than half the national average increase, i.e., their ratios lie between 1.000 and 1.078. Thus, for thirty-one of fifty-one states, unemployment rates either declined during 1990-1992 or increased only moderately. This "fact" provides much of the explanation for the limited borrowing by state UI programs during the 1990-1992 downturn.

Yet another perspective on trust fund reserve adequacy and reserve losses during 1990-1992 is provided in table 9.4C. Here the state-level information has been arranged to focus on reductions in HCMs between 1989 and 1992. Maine led the nation with a reduction in its multiple of 0.79. The multiples in thirteen states decreased by 0.40 or more, and nine of the thirteen are located along the Atlantic coast.¹⁹ As with the increases in unemployment, the decreases in reserves were concentrated mainly along the eastern seaboard.

Table 9.4C is also useful for showing the full range of reductions in state HCMs during 1990-1992.²⁰ Not one of the reductions equaled or exceeded -1.0, and only five equaled or exceeded -0.60. The five states

Table 9.4B Summary of Net Reserves by State, December 1989 and December 1992
(States Arrayed by Unemployment Rate Ratios)

	Net reserves (\$ millions)			High-Cost Multiple			Unemployment rates 1990-1992/ 1987-1989
	Dec. 1989	Dec. 1992	Change	1989	1992	Change	
New Hampshire	204	130	-74	0.89	0.55	-0.34	2.400
Massachusetts	909	-380	-1,289	0.45	-0.18	-0.63	2.236
Rhode Island	304	104	-199	0.92	0.32	-0.60	2.227
Connecticut	274	-653	-927	0.22	-0.53	-0.75	1.947
Vermont	197	181	-16	1.59	1.37	-0.22	1.783
Delaware	207	219	11	1.19	1.13	-0.06	1.685
New Jersey	2,795	2,440	-355	1.06	0.85	-0.21	1.664
Maine	206	35	-171	0.94	0.15	-0.79	1.632
New York	3,181	214	-2,967	0.76	0.05	-0.71	1.476
District of Columbia	76	-19	-95	0.40	-0.09	-0.49	1.405
Maryland	598	146	-452	0.75	0.17	-0.58	1.387
California	5,419	2,787	-2,633	0.89	0.42	-0.47	1.380
Virginia	718	507	-212	1.17	0.74	-0.43	1.366
North Carolina	1,471	1,387	-83	1.20	0.98	-0.22	1.362
Florida	2,041	1,444	-597	1.30	0.80	-0.50	1.345
Pennsylvania	1,616	808	-808	0.55	0.25	-0.30	1.297
South Carolina	415	433	18	0.66	0.60	-0.06	1.154
Michigan	370	-72	-442	0.13	-0.02	-0.15	1.116

Minnesota	359	224	-135	0.52	0.27	-0.25	1.093
Indiana	770	942	171	1.04	1.11	0.07	1.083
Oregon	804	1,055	251	1.35	1.47	0.12	1.070
Hawaii	340	362	22	1.40	1.35	-0.05	1.058
Nevada	321	234	-87	1.12	0.65	-0.47	1.047
Tennessee	657	603	-54	0.90	0.69	-0.21	1.041
Ohio	778	602	-176	0.30	0.21	-0.09	1.037
Arizona	493	372	-120	0.84	0.55	-0.29	1.037
Illinois	1,268	848	-421	0.47	0.28	-0.19	1.035
Georgia	1,018	966	-52	0.96	0.79	-0.17	1.032
Missouri	372	3	-369	0.50	0.00	-0.50	1.028
West Virginia	146	141	-5	0.41	0.35	-0.06	1.019
Wisconsin	1,041	1,195	154	1.17	1.13	-0.04	1.007
Alaska	180	232	52	0.93	1.06	0.12	1.005
Montana	80	96	16	0.63	0.62	-0.01	0.970
Idaho	220	240	20	1.37	1.16	-0.21	0.967
Alabama	623	550	-72	1.21	0.90	-0.31	0.965
Kansas	472	606	134	1.35	1.47	0.12	0.943
Iowa	518	615	98	1.20	1.21	0.01	0.943
Washington	1,364	1,766	402	0.97	0.99	0.02	0.937
Arkansas	131	81	-50	0.40	0.20	-0.20	0.934
Mississippi	388	345	-43	1.67	1.26	-0.41	0.916
Oklahoma	323	419	96	1.34	1.53	0.19	0.910

(continued)

Table 9.4B (continued)

	Net reserves (\$ millions)			High-Cost Multiple			Unemployment rates 1990-1992/ 1987-1989
	Dec. 1989	Dec. 1992	Change	1989	1992	Change	
North Dakota	45	50	5	0.70	0.65	-0.05	0.909
Texas	989	586	-402	0.73	0.36	-0.37	0.902
Utah	239	342	104	1.25	1.40	0.15	0.885
Kentucky	393	364	-29	0.69	0.54	-0.15	0.877
New Mexico	174	239	65	1.48	1.69	0.21	0.857
South Dakota	45	50	5	1.49	1.29	-0.20	0.811
Colorado	239	339	100	0.75	0.87	0.12	0.796
Wyoming	54	110	56	0.71	1.23	0.52	0.756
Louisiana	306	601	295	0.43	0.72	0.29	0.693
Nebraska	127	161	34	0.92	0.97	0.05	0.671
Puerto Rico	564	749	186	1.82	2.15	0.33	NA
Virgin Islands	28	47	19	1.92	3.21	1.29	NA
U.S. total	36,871	25,847	-11,029	0.87	0.56	-0.31	1.156

NA = not applicable

Table 9.4C Summary of Net Reserves by State, December 1989 and December 1992
(States Arrayed by Changes in High-Cost Multiples)

	Net reserves (\$ millions)			High-Cost Multiple			Unemployment rates
	Dec. 1989	Dec. 1992	Change	1989	1992	Change	1990-1992/ 1987-1989
Maine	206	35	-171	0.94	0.15	-0.79	1.632
Connecticut	274	-653	-927	0.22	-0.53	-0.75	1.947
New York	3,181	214	2,967	0.76	0.05	-0.71	1.476
Massachusetts	909	-380	1,289	0.45	-0.18	-0.63	2.236
Rhode Island	304	104	-199	0.92	0.32	-0.60	2.227
Maryland	598	146	-452	0.75	0.17	-0.58	1.387
Florida	2,041	1,444	-597	1.30	0.80	-0.50	1.345
Missouri	372	3	-369	0.50	0.00	-0.50	1.028
District of Columbia	76	-19	-95	0.40	-0.09	-0.49	1.405
California	5,419	2,787	-2,633	0.89	0.42	-0.47	1.380
Nevada	321	234	-87	1.12	0.65	-0.47	1.047
Virginia	718	507	-212	1.17	0.74	-0.43	1.366
Mississippi	388	345	-43	1.67	1.26	-0.41	0.916
Texas	989	586	-402	0.73	0.36	-0.37	0.902
New Hampshire	204	130	-74	0.89	0.55	-0.34	2.400
Alabama	623	550	-72	1.21	0.90	-0.31	0.965
Pennsylvania	1,616	808	-808	0.55	0.25	-0.30	1.297

(continued)

Table 9.4C (continued)

	Net reserves (\$ millions)			High-Cost Multiple			Unemployment rates 1990-1992/ 1987-1989
	Dec. 1989	Dec. 1992	Change	1989	992	Change	
Arizona	493	372	-120	0.84	0.55	-0.29	1.037
Minnesota	359	224	-135	0.52	0.27	-0.25	1.093
Vermont	197	181	-16	1.59	1.37	-0.22	1.783
North Carolina	1,471	1,387	-83	1.20	0.98	-0.22	1.362
New Jersey	2,795	2,440	-355	1.06	0.85	-0.21	1.664
Idaho	220	240	20	1.37	1.16	-0.21	0.967
Tennessee	657	603	-54	0.90	0.69	-0.21	1.041
Arkansas	131	81	-50	0.40	0.20	-0.20	0.934
South Dakota	45	50	5	1.49	1.29	-0.20	0.811
Illinois	1,268	848	-421	0.47	0.28	-0.19	1.035
Georgia	1,018	966	-52	0.96	0.79	-0.17	1.032
Michigan	370	-72	-442	0.13	-0.02	-0.15	1.116
Kentucky	393	364	-29	0.69	0.54	-0.15	0.877
Ohio	778	602	-176	0.30	0.21	-0.09	1.037
West Virginia	146	141	-5	0.41	0.35	-0.06	1.019
South Carolina	415	433	18	0.66	0.60	-0.06	1.154
Delaware	207	219	11	1.19	1.13	-0.06	1.685
North Dakota	45	50	5	0.70	0.65	-0.05	0.909
Hawaii	340	362	22	1.40	1.35	-0.05	1.058

Wisconsin	1,041	1,195	154	1.17	1.13	-0.04	1.007
Montana	80	96	16	0.63	0.62	-0.01	0.970
Iowa	518	615	98	1.20	1.21	0.01	0.943
Washington	1,364	1,766	402	0.97	0.99	0.02	0.937
Nebraska	127	161	34	0.92	0.97	0.05	0.671
Indiana	770	942	171	1.04	1.11	0.07	1.083
Colorado	239	339	100	0.75	0.87	0.12	0.796
Kansas	472	606	134	1.35	1.47	0.12	0.943
Oregon	804	1,055	251	1.35	1.47	0.12	1.070
Alaska	180	232	52	0.93	1.06	0.12	1.005
Utah	239	342	104	1.25	1.40	0.15	0.885
Oklahoma	323	419	96	1.34	1.53	0.19	0.910
New Mexico	174	239	65	1.48	1.69	0.21	0.857
Louisiana	306	601	295	0.43	0.72	0.29	0.693
Puerto Rico	564	749	186	1.82	2.15	0.33	NA
Wyoming	54	110	56	0.71	1.23	0.52	0.756
Virgin Islands	28	47	19	1.92	3.21	1.29	NA
U.S. total	36,871	25,847	-11,029	0.87	0.56	-0.31	1.156

NA = not applicable

at the top of table 9.4C are particularly relevant because each state experienced a major increase in unemployment. The lowest unemployment rate ratio for these five states was 1.476 for New York. Observe that fifteen programs actually had HCMs at the end of 1992 than at the end of 1989, a unique development during a recessionary period and largely attributable to the shallowness of the recession.

To help place the 1990-1992 downturn into a greater perspective, table 9.5 displays state-level summary information for the four most recent recessions. The top half of the table focuses on increases in unemployment while the bottom half summarizes reductions in HCMs.

The most important inference to be drawn from the table is very simple: the 1990-1992 downturn was mild relative to the previous three downturns. Consider first the increases in state unemployment rates. Of the fifty states and the District of Columbia, the number with ratios of 1.25 or larger were as follows: 1971-1973 (thirty-seven), 1974-1976 (thirty-two), 1981-1983 (thirty-six), and 1990-1992 (sixteen). Both summary measures at the end of each line (the state median and the U.S. total) convey the same message: the 1990-1992 downturn was comparatively mild in terms of the increase in the average unemployment rate.

Turning to the reductions in HCMs shown at the bottom of table 9.5, the same point emerges. The numbers of states whose multiples decreased by 0.5 or more were as follows: 1969-1973 (thirty-four), 1973-1976 (forty-four), 1979-1983 (twenty-five), and 1989-1992 (eight). Finally, the state medians and U.S. totals at the ends of these four bottom lines reemphasize the small reductions in HCMs during 1989-1992.²¹

From the information in table 9.5, one main conclusion emerges: the increases in unemployment and losses of trust fund reserves were unusually small during the most recent recession. Also contributing to the modest amount of state borrowing during 1990-1994 were the comparatively high levels of reserves present in many states prior to the downturn.

One additional factor linked to emergency UI benefits contributed to the low level of state borrowing during 1990-1994. The Emergency Unemployment Compensation (EUC) program paid benefits to large numbers of claimants from late 1991 through early 1994.²² This program compensating regular UI exhaustees was fully federally financed.

Table 9.5 Recession-Related Changes in Unemployment and UI Trust Fund Reserves

Annual averages	Ratios of average state unemployment rates for indicated periods							State median	U.S. total
	Less than 0.75	0.75 - 0.99	1.0 - 1.24	1.25 - 1.49	1.5 - 1.74	1.75 - 1.99	2.0+		
1971-1973 over 1967-1969	0	2	12	15	12	3	7	1.45	1.51
1974-1976 over 1971-1973	0	6	13	21	8	3	0	1.33	1.33
1981-1983 over 1977-1979	0	2	13	12	12	11	1	1.52	1.42
1990-1992 over 1987-1989	2	17	16	8	3	2	3	1.11	1.16
Changes in state UI high-cost multiples									
End-of-year changes	Decreases							State median	U.S. total
	Increase	0.0 - 0.24	0.25 - 0.49	0.5 - 0.74	0.75 - 0.99	1.0 - 1.49	1.5+		
1969 to 1973	1	4	12	13	9	10	2	-0.66	-0.65
1973 to 1976	1	4	2	10	12	13	9	-0.92	-0.98
1979 to 1983	10	6	10	9	3	10	3	-0.49	-0.62
1989 to 1992	13	19	11	6	2	0	0	-0.20	-0.31

SOURCE: Calculations performed at the Urban Institute using data from the U.S. Department of Labor. State unemployment rate estimates prior to 1976 for several small states made at the Urban Institute. Calculations are shown for the fifty states and the District of Columbia.

However, after August 1992 there was a feature of EUC, known as optional EUC, which allowed claimants to utilize their EUC base period if it yielded a larger weekly benefit than the base period preceding their more current spell of unemployment. Thus, new claimants for state-financed regular UI were able to collect added weeks of federally-financed EUC even though they experienced substantial intervening periods of employment. Furthermore, the utilization of these EUC benefits did not preclude receipt of any regular UI benefits (based on the later base period) after exhausting EUC. In effect, the U.S. Treasury paid some weeks of what otherwise would have been state-financed regular UI benefits.

While EUC was operating it paid total benefits of \$27.9 billion. State reporting of EUC captured only one element of optional EUC, the number of initial claims, which totaled 12.6 percent of all EUC initial claims. It is almost certain that optional EUC benefits were received for shorter periods than other EUC benefits. To estimate the savings to state UI trust funds, an algorithm was developed to project weeks compensated and benefits for optional EUC claims at the national level. The algorithm was then applied to state-level data on optional EUC initial claims to estimate state-level payouts. Because identical durations for the two groups of EUC claimants were assumed, the algorithm probably exaggerates payouts under optional EUC. Nationwide, optional EUC was estimated to total \$3.12 billion. However, assuming these amounts reduced state reserves dollar for dollar and assuming no response of experience-rated taxes, only \$0.475 billion in added state borrowing was projected during 1992-1994 had optional EUC not been available. Interestingly, all of the added borrowing estimated by the model was concentrated in the seven states that did borrow from the U.S. Treasury, i.e., no other states would have borrowed in the absence of optional EUC benefits.

Thus, without optional EUC, we estimate that seven states would have borrowed a total of \$4.89 billion (rather than \$4.42 billion) and that the aggregate state UI trust fund balances at the end of 1994 would have been \$28.21 billion (rather than \$31.34 billion). As a factor explaining the low level of state borrowing during 1990-1994, optional EUC was not important.

A final detail regarding loan repayments during 1991-1994 should be noted. In August-September 1993 Connecticut repaid \$0.818 billion

of Title XII advances using the proceeds of state-issued bonds, the major part of a bond issuance that totaled \$1.0 billion. These bonds are scheduled to be fully repaid by 2002. The first of fourteen scheduled semiannual repayments occurred in February 1995, so that very little of this state-issued debt has been repaid.²³ Thus, for Connecticut, most of the state UI debt might be appropriately counted as still outstanding.

To summarize, the low amount of state borrowing during 1990-1994 can be attributed to two major factors: (1) more adequate trust fund balances at the end of 1989 compared to 1979, and (2) the mild nature of the recession across most of the country. Optional EUC was not an important factor explaining the low level of borrowing.

One other concluding observation from this section is to note the low annual rates of trust fund rebuilding during 1993 and 1994. It appears that states will have less adequate reserves (as suggested by solvency indicators such as HCMs) when they enter the next recession than they did prior to the 1990-1992 downturn.

Perhaps states currently require fewer reserves than in the past because their financing systems are now much more responsive to trust fund drawdowns. The historical descriptions from this section did not try to assess the quantitative importance of so-called flexible financing features or their growth in recent years. The next two sections address this important topic.

Flexible Financing Provisions

The key factors that make UI benefit financing a complex and important issue are that benefit outlays are highly sensitive to the business cycle and that the timing and severity of cyclical downturns are difficult to predict. Each state must develop a funding strategy to deal with these elements. In the early years of the UI program, as demonstrated in the first section, the focus of financing strategy was on building up sufficient reserves to handle a worst-case recession, using the HCM or similar measure as a benchmark. However, over the years it has been increasingly recognized that determining the appropriate level of reserves is more complex than just looking at potential future outlays. A state must also assess the responsiveness of its tax system to

changes in benefit outlays and fund balance, as well as take into account the level of borrowing risk that is deemed acceptable. The more responsive the tax system, the lower the reserve level required for a state's needs. Likewise, the greater the acceptable risk of borrowing, the lower the adequate reserve level. From a pure fund adequacy perspective, as opposed to other goals of the UI system, it is recognized that having a low fund balance coupled with a responsive tax system is a legitimate strategy.

Tax responsiveness refers to the level and speed of the automatic response to benefit increases built into state UI tax systems. This automatic response occurs in two ways. First, experience-rating systems assign tax rates to individual employers based on some measure of experience with unemployment, usually related to the amount of UI benefits paid. As benefit costs rise, average tax rates also rise. Second, every state has some triggering mechanism whereby a declining fund balance leads to higher tax rates for all firms, either through multiple rate schedules or surcharges or both. Beyond taxes, some states also have mechanisms that tie benefit restrictions to low threshold levels of trust fund balances. The combination of tax and benefit features automatically triggered by the condition of the trust fund is sometimes referred to as flexible financing.

The origins and evolution of flexible financing in the individual states reflect varied historical developments. In some states, ad hoc arrangements were created during periods of trust fund inadequacy and were intended as temporary fixes. Others have implemented flexible financing as permanent changes. At least two states, Illinois and Pennsylvania, overhauled their tax and benefit statutes in the late 1980s with the intention of reducing the average trust fund balance over the business cycle and adding flexibility features. Recession-related draw-downs would be countered by automatic tax increases and benefit reductions as the fund balance descended past certain thresholds towards zero. We have not attempted to follow the individual motivations leading to state actions but have tried to document the changing prevalence of flexibility features.

Despite the awareness of flexible financing as a component of a funding strategy, little has been written about the determinants of flexible financing and there has been even less quantitative analysis. These topics are the focus here and in the following sections.

There is a general perception that states have increased their reliance on flexible financing over time, especially since 1980. Several events occurred in the early 1980s that may have caused this. First, during the back-to-back recessions of 1980-1983, thirty-one states borrowed from the federal loan account to pay benefits. Second, federal loan policy became significantly tighter, as previously discussed. Deferrals of FUTA credit reductions (for loan repayment) were eliminated in 1980 and the interest-free feature (except on a very short-term basis) of the loan system was eliminated in 1982. At the same time that borrowing has become a less attractive option for states, there has been a growing recognition that carrying large trust fund balances may have undesirable effects. As a result, states have an incentive to make their tax systems more responsive.

This section discusses features that make a system more responsive and examines changes made by states since 1980. We also compare and contrast a responsive and a nonresponsive state. The next section undertakes some quantitative analysis of responsiveness and tries to determine whether or not responsiveness has increased in the last decade or so. Also, the results of a simulation analysis of the flexible financing system in Pennsylvania are reported. The subsequent discussion addresses some pros and cons and policy issues associated with flexible financing.

Flexibility Features and Trends

Since 1980, although they have often acted hesitantly, many state legislatures faced with problems of insolvency in their UI trust fund accounts have moved to increase the responsiveness of their UI systems. They have enacted legislation meant to increase UI taxes and to lower UI benefits during recessionary periods. These states are, in effect, making up for the lack of forward funding in their systems by working to avoid insolvency at low levels of trust fund reserves. States have done this primarily by:

- making tax table triggers more sensitive,
- adding or strengthening existing solvency taxes, and
- linking changes and/or levels of benefits to trust fund reserves

The most significant revisions in these features have come from states with relatively severe solvency problems. Tables 9.6A and 9.6B dis-

play the changes since 1980 in selected tax features for fifty-one programs.

In the past fifteen years, eleven states have raised the fund balance triggers that activate the highest tax rate schedule, while either holding constant or raising tax rates for the top schedule. This change alone means that the state will respond with higher rates on employers at an earlier time for a given benefit drawdown. For example, in 1991, Indiana raised the fund balance required to trigger on its highest employer tax rate schedule from 0.85 percent of wages to 1.5 percent, making it easier to activate that schedule when the balance falls.

Table 9.6A 1996 Flexible Tax Features (Part 1)

	Solvency tax	Change since 1980	Responsi ve social tax	Change since 1980	Highest tax schedule trigger (Change since 1980)	Lowest tax schedule trigger	Array method	Change since 1980
Alabama			x	x	-	-		
Alaska	x	x	x	x		-	x	
Arizona								
Arkansas	x				-			
California	x	x			-	-		
Colorado	x		x		+			
Connecticut	x				+			
Delaware	x							
District of Columbia					+			
Florida								
Georgia	x					+		
Hawaii					-			
Idaho					+		x	
Illinois	x	x						
Indiana					-	+		
Iowa							x	
Kansas							x	
Kentucky								
Louisiana	x	x	x					
Maine	x							
Maryland	x	x			-			
Massachusetts			x	x	+	-		

		Change	Respon	Change	Highest	Lowest		Change
	Solvency	since	si	since	tax	tax		since
	tax	1980	ve social	1980	trigger	trigger	Array	1980
			tax		(Change	since	method	
					1980)			
Michigan	x		x					
Minnesota	x	x			+	+		
Mississippi	x		x					
Missouri	x				+	+		
Montana					+			
Nebraska								
Nevada								
New								
Hampshire	x							
New Jersey	x	x			-			
New Mexico								
New York	x				-	-		
North Carolina	x				-	-		
North Dakota					+	-	x	x
Ohio	x		x					
Oklahoma	x							
Oregon								
Pennsylvania	x	x			+			
Rhode Island	x		x		+			
South Carolina	x							
South Dakota	x	x				+		
Tennessee					+			
Texas	x	x	x			+		
Utah			x		-			
Vermont					-	+	x	
Virginia	x	x	x			-		
Washington							x	x
West Virginia								
Wisconsin			x					
Wyoming	x				+	+		
Total	28	11	13	3	13+/11-	8+/8-	7	2

SOURCE U.S. Department of Labor, Unemployment Insurance Service.

NOTE: For trigger change columns, "+" indicates a move to more responsiveness and "-" means the opposite. The responsive social tax is an explicit recoupment of noncharges and ineffective charges. The array method assigns tax rates to employers ranked by experience factor, such that each tax rate applies to an equal amount of taxable wages

Table 9.6B 1996 Flexible Tax Features (Part 2)

	Indexed tax base	Change since 1980	Flexible tax base	Change since 1980	Benefit ratio	Change since 1980	Flexible employee tax	Change since 1980
Alabama					x	x		
Alaska	x	x					x	
Arizona								
Arkansas								
California								
Colorado								
Connecticut					x			
Delaware								
District of Columbia			x	x				
Florida					x			
Georgia								
Hawaii	x							
Idaho	x							
Illinois					x	x		
Indiana								
Iowa	x				x	x		
Kansas								
Kentucky								
Louisiana								
Maine								
Maryland					x			
Massachusetts								
Michigan					x			
Minnesota	x	x			x			
Mississippi					x			
Missouri			x	x				
Montana	x	x						
Nebraska								
Nevada	x							
New Hampshire								
New Jersey	x						x	
New Mexico	x							
New York								
North Carolina	x	x						
North Dakota	x	x						
Ohio								
Oklahoma	x	x						

	Indexed tax base	Change since 1980	Flexible tax base	Change since 1980	Benefit ratio	Change since 1980	Flexible employee tax	Change since 1980
Oregon	x				x			
Pennsylvania					x		x	x
Rhode Island	x	x						
South Carolina								
South Dakota								
Tennessee								
Texas					x			
Utah	x				x	x		
Vermont					x			
Virginia					x	x		
Washington	x	x			x	x		
West Virginia								
Wisconsin								
Wyoming	x	x			x			
Total	17	9	2	2	17	6	3	1

SOURCE: U.S. Department of Labor, Unemployment Insurance Service

NOTE: A flexible tax base is one that increases or decreases with solvency conditions. An indexed tax base is one that increases with average wages.

The addition or strengthening of an existing solvency tax can have the same effect as increasing the sensitivity of a tax table trigger. Though states have various names for these taxes, they are primarily meant to increase revenues at low levels of trust fund reserves.

As of 1995, twenty-eight states had a solvency tax. Since 1980, eleven states added a solvency tax specifically triggered by low trust fund levels and designed solely to boost contributions. Most solvency tax rates range from 0.1 to 1.0 percent and are levied as additions to existing experience-rated tax rates.

Many of the solvency taxes were added as part of more comprehensive law reforms to deal with incidents of insolvency but now remain in place and contribute to the eroding degree of countercyclicality of the UI system. As an illustration, after having severe solvency problems in the early 1980s, Minnesota, in 1988, raised the trigger on its highest tax schedule from \$80 million to \$200 million, effectively activating the top schedule sooner in the face of a trust fund drawdown. Furthermore, the state removed a rate limiter that had been in place to prevent an employer's rate from increasing or decreasing by more than 2.5 percentage points in one year.

Also added to the Minnesota system was an unusual feature that contributes significantly to responsiveness. This is a solvency tax, which can change on a quarterly basis, adding 10 percent to scheduled tax rates when the trust fund falls below \$150 million and 15 percent when the fund falls below \$75 million.

In addition to solvency taxes, many states add a “social tax” to the basic tax rate. These social taxes can have a significant effect on the degree of tax responsiveness. During the 1980s, three states joined the existing thirteen that had social taxes constructed to specifically recoup the dollar amount of the previous year’s uncollectible benefit charges, i.e., ineffective charges and noncharges. Other states either account for social charges indirectly in their tax rate schedules or through solvency taxes based on the fund balance. By attempting to account for each dollar of the previous year’s total benefits, these sixteen states increase the responsiveness of taxes to current outlays. Without this accounting, the fluctuating number of employers at the maximum and minimum tax rates, which determines a large share of social charges, can cause noticeable differences between total benefits paid out and tax revenues. In particular, the volume of social charges may cause the tax system to respond inadequately during periods of trust fund drawdowns.

Massachusetts has perhaps the most comprehensive computation of social charges. The state accounts for each dollar of unattributed benefit costs by adding together noncharged benefits, benefits charged to inactive firms, ineffective charges, and dependents’ benefits, and then subtracting interest earned and the balances of minimum-rated employers. A portion of the resulting amount is assigned to each employer as a deduction from each one’s reserve ratio. In effect, employers are credited with lower reserves, resulting in higher taxes.

Part of this trend has also included making levels of benefit payments to UI claimants contingent on the size of the trust fund. Table 9.7 provides additional details on this feature and on the trigger mechanism that activates flexible benefits.

Twelve states enacted some form of flexible benefit provision between 1983 and 1991, and these features are still present in nine states as of 1995. Eleven of the twelve states provided for benefit freezes or benefit reductions.²⁴ All states but Delaware target these automatic features on high-wage claimants. Ten states have done this through automatic limits on the annual growth in the maximum weekly

benefit amount (WBA) and/or reductions in the maximum. Three states provide for variation in the wage replacement rate, but two of the three (Pennsylvania and Wyoming) hold low-wage beneficiaries harmless when the reductions are in effect.

Table 9.7 Flexible Benefit Features

	First year	Last year	Flexible replacement rate	Flexible maximum WBA	Fund balance	Reserve ratio	Employer taxes	All other
Alabama								
Alaska								
Arizona								
Arkansas								
California								
Colorado								
Connecticut								
Delaware	1988		x	x	x			
District of Columbia								
Florida								
Georgia	1989	1991		x	x			
Hawaii								
Idaho								
Illinois	1991			x	x		x	x
Indiana								
Iowa								
Kansas								
Kentucky	1987			x	x		x	
Louisiana								
Maine								
Maryland								
Massachusetts								
Michigan								
Minnesota	1983			x	x			
Mississippi								
Missouri								
Montana								
Nebraska								
Nevada								
New Hampshire								
New Jersey								

(continued)

Table 9.7 (continued)

	First year	Last year	Flexible replacement rate	Flexible maximum WBA	Fund balance	Reserve ratio	Employer taxes	All other
New Mexico								
New York								
North Carolina	1984	1987		x		x		
North Dakota	1991			x	x		x	
Ohio								
Oklahoma	1984			x			x	
Oregon								
Pennsylvania	1990		x			x		
Rhode Island								
South Carolina								
South Dakota								
Tennessee								
Texas								
Utah								
Vermont	1987			x				x
Virginia								
Washington	1985	1993		x		x		
West Virginia								
Wisconsin								
Wyoming	1984		x		x			
Total			3	10	7	3	4	2

SOURCE Data taken from U S. Department of Labor, Unemployment Insurance Service publications such as "Significant Provisions of State Unemployment Insurance Laws" and from Commerce Clearing House summaries of state UI laws

In ten of the twelve states, the trigger for the automatic benefit feature has been either the absolute level of the state trust fund or the trust fund balance measured as a ratio of covered wages (as a ratio of benefit payouts in Pennsylvania). Other components of the triggers have been almost always related to financing variables, e.g., employer tax rates (four states) or outstanding Title XII loans (Vermont). The trigger mechanism in three states involves more than a single indicator, with the Illinois trigger having three separate components.²⁵

Additional Flexibility Features

There exist several other important tax provisions that also act to quicken the response of UI taxes and that have increased in number in the last fifteen years. Tables 9.6A and 9.6B provide an overview of these features. The following elements tend to contribute to the faster response of systems:

- Benefit ratio experience rating,
- Indexed taxable wage base, and
- Array method of assigning tax rates

Experience-rating formulas—reserve ratio, benefit ratio, benefit wage ratio, and payroll decline—are designed to assess the amount of benefit payments attributable to an individual firm and to recoup a portion through the assignment of a yearly tax rate.²⁶ Several factors in the way experience-rating mechanisms have been constructed lead to greater responsiveness in some states than in others.

The benefit ratio and benefit wage ratio formulas are considered as responding faster because of their shorter memory²⁷ and lack of reserve accounting. The crediting of contributions to employer accounts in a reserve ratio system actually creates a drag on responsiveness after the first year. How much faster benefit ratio systems respond is difficult to measure because of the different intervals within tax schedules and the varying employer mix in each state. However, taking just a sample of states that incurred similar benefit payouts during the last recession, a general comparison can be made in the amount of movement by employers into and out of the minimum and maximum tax rates for the different formulas. The following table helps to illustrate the contrasting behavior.

Table 9.8 Comparison of Movement in Distributions of Wages by Tax Rate

Percentage at each tax category	Reserve ratio states	Benefit ratio states
1990 percentage of wages taxed at minimum rate	10.3	38.6
1993 percentage of wages taxed at minimum rate	7.8	25.1
1990 percentage of wages taxed at maximum rate	4.6	5.5
1993 percentage of wages taxed at maximum rate	6.0	6.4

SOURCE. Based on U.S. Department of Labor, Employment and Training Administration, ES-204 reports, section C. Data refer to three reserve ratio states (Arizona, Hawaii, and Rhode Island) and three benefit ratio states (Alabama, Maryland, and Virginia)

In this sample of states, the greatest difference was in the number of employers moving away from the minimum rate under the benefit ratio as opposed to under the reserve ratio system. Reserve ratio states went from an average of 10.3 percent of wages being taxed at the minimum rate to 7.8 percent, while the benefit ratio states went from 38.6 percent of wages to 25.1 percent. Thus, a much larger share of wages moved to higher tax rates in the benefit ratio states than in the reserve ratio states.

The number of employers at the minimum and maximum tax rates is an important determinant of the responsiveness of any state system. The more firms there are at the minimum and maximum tax rates the less responsive the tax system is to benefit shocks, because those employers will exhibit less movement in their tax rates. Maximum-rated employers will be bounded by the highest tax rate, and minimum-rated employers often have large previous balances or low previous benefit levels.

In a review of all state tax schedules for rate year 1993, there was an average of 4 percent of employers located at the maximum tax rate. This ranged from a high of 14 percent in California to a low of less than 1 percent in New Hampshire. There was an average of 16 percent of employers located at the minimum rate, ranging from a high of 58 percent in Nevada to less than 1 percent in New Jersey.

In order to avoid the congregation of employers at the minimum and maximum tax rates, a few states actually fix the number of employers that will receive each rate by ranking employers against each other, rather than by setting rates in preassigned intervals. In 1987, North Dakota joined six other states in using this type of so-called "array" allocation system for employer tax rate determinations.²⁸ Array allocation rate setting, which is independent of the type of experience rating formula, places a specific percentage of aggregate taxable wages in each tax rate interval. This not only allows states to determine total contributions more precisely, since the percentage of wages at each tax rate is predetermined, but also can be more effective in responding to changes in benefit levels.

Possibly the most significant change in state financing laws that affects responsiveness in experience rating is a rise in the state taxable wage base or indexing the base. Note in table 9.6B that since the 1982 increase in the federal taxable wage base to \$7,000, nine states have passed laws to index their wage bases to a proportion of total wages,

bringing the sum to seventeen indexed states (plus the Virgin Islands). Another seventeen states increased their taxable wage base somewhere between \$500 and \$3,800 during this period.

In a benefit ratio state, increasing the taxable wage base extends the range of effective experience rating to high-unemployment firms, as compared to a state that maintains a much lower base. In a reserve ratio state, however, the immediate effect is not as clear and will depend more on the distribution of employers along a given state tax schedule. For a much higher base, reserve ratio employers will have a tendency to move away from the maximum and minimum rates and towards the experienced-rated portion of the tax table. However, the higher contributions will also help some employers build up significant balances, allowing them to remain in the more unresponsive portions of the tax schedule.²⁹

Additionally, six states have had a provision that varies the wage base according to the trust fund balance. Of these, two states (see table 9.6B) currently have such a provision. Since 1985, Missouri has automatically raised its taxable wage base by \$500 per year whenever the trust fund balance has fallen below \$100 million and lowered it by \$500 per year (but not below \$7,000) whenever the balance has exceeded \$250 million. Between 1992 and 1995, Ohio provided for \$250 annual increments in its tax base (\$8,000 in 1991), but the base would have automatically increased to \$9,000 if the trust fund had fallen below a predetermined threshold. Iowa implemented special additions to its indexed tax base in the three years of 1984 to 1986. Montana had a similar provision between 1975 and 1977. Hawaii experimented with a trigger-activated flexible tax base in the single year 1988. The District of Columbia instituted a trigger-activated tax base provision in 1995.

All of these provisions, together with several others that are perhaps quantitatively less significant,³⁰ have been adopted during periods of insolvency and now remain as features contributing to the faster response of UI taxes.

A Comparison of Texas and New York

To better assess how particular features of state laws affect responsiveness, two states were chosen for closer examination. As the follow-

ing table illustrates, tax revenues in Texas were clearly more responsive to benefit increases than were tax revenues in New York during and after the 1990-1991 recession.

Table 9.9 Annual Trust Fund Data for Texas and New York (\$ billions)

Year	Texas			New York		
	Balance	Benefits	Taxes	Balance	Benefits	Taxes
1988	\$0.27B	\$0.75B	\$1.49B	\$3.26B	\$1.03B	\$1.34B
1989	0.99	0.71	1.36	3.18	1.32	0.94
1990	1.29	0.74	0.93	2.55	1.76	0.89
1991	0.94	0.96	0.52	1.19	2.46	0.98
1992	0.59	1.12	0.71	0.21	2.44	1.37
1993	0.45	1.04	0.84	0.13	1.99	1.97
1994	0.48	0.98	0.99	0.19	2.00	2.06

SOURCE U.S. Department of Labor (1992).

Although the recession was mild in Texas, contributions responded strongly to the growth in benefits. The first large benefit increase did not occur until 1991, when benefits rose by 30 percent, followed by a further 17 percent increase in 1992, before declining slightly in 1993. Contributions, which had reached a low point in 1991, responded quickly, with an increase of 37 percent the first year and 18 percent in each of the next two years. The fund balance dropped three years in a row but in 1994 started to rise again.

New York, on the other hand, experienced a very large growth in benefit outlays during this recession, with the first significant increase occurring in 1989. Benefits rose by 28 percent in 1989, 33 percent in 1990, and 40 percent in 1991. Contributions, however, went *down* in 1990. The first significant increase occurred in 1992, three years after the beginning of the recession. New York eventually exhausted its once-large fund balance and needed cash-flow loans in both 1992 and 1993.

We compared and contrasted the laws of these two states to see if we could identify factors that made their tax systems more or less responsive. Although Texas and New York cannot be compared directly on all dimensions of their legislation, three key differences stand out.

First, Texas has a benefit ratio system, and New York has a reserve ratio system. A benefit ratio system reflects benefit increases quickly,

because the employer's experience factor is not affected by current and past contributions. Changes in employer experience factors accounted for approximately the same average tax rate change in both states during this time period, even though the recession was much more severe in New York.

Second, Texas explicitly and immediately covers its nonchargeable and ineffective charges by reflecting them in the following year's tax rates through its "replenishment ratio" and "replenishment tax rate." New York has no analogous mechanism.

Third, Texas makes a direct link between the level of its solvency surcharge and the amount of contributions needed to restore the fund balance to the desired level. New York, in contrast, has a single solvency rate no matter how low the fund balance drops.

Quantitative Analysis of Flexible Financing

This section summarizes our empirical analyses of the quantitative importance of flexible financing. Measures of the response of contributions to increased benefit outflows are derived. One-, two-, and three-year response measures are calculated, and changes dating back to the early 1950s are documented. Tax responsiveness in 1970 and 1990 is then examined for a subset of states that had recessions centered on both dates. Regressions also are fitted to estimate possible changes in tax responsiveness. Finally, a simulation analysis of flexible financing in Pennsylvania is reviewed.

Empirical Tax Responsiveness Measures

Since the preceding section shows that many states have added flexible financing features in recent years, we attempted to test empirically whether tax responsiveness has increased quantitatively, particularly in the years following the loan policy changes of the early 1980s. An important practical difficulty is that the economy has experienced only one, fairly mild, recession since 1980-1983 from which to make inferences.

Using annual data from 1950 through 1994, we first constructed empirical measures of tax responsiveness. Recessions were identified on a state-by-state basis rather than nationally to account for differential timing of business cycles across states as well as localized economic downturns. Recessionary periods were defined as those in which the increase in the benefit cost rate (benefits as a percentage of total wages) from the base year to the peak year was 35 percent or greater. The beginning year of the recessionary period was identified as the first year with a 20 percent increase over the prior year (which then became the base year). An additional criterion was to eliminate recessions that started within three years of the previous recession, to avoid overlapping of the response measures. The total number of periods meeting these criteria was 303, or about 6 per state, with 47 occurring since 1982.

We then computed one-year, two-year, and three-year tax responses for each recessionary period, as follows:

$$\text{one-year response} = \frac{(C_{t+1} - C_t)}{(B_t - B_{t-1})}$$

$$\text{two-year response} = \frac{((C_{t+1} - C_t) + (C_{t+2} - C_t))}{((B_t - B_{t-1}) + (B_{t+1} - B_{t-1}))}$$

$$\text{three-year response} = \frac{((C_{t+1} - C_t) + (C_{t+2} - C_t) + (C_{t+3} - C_t))}{((B_t - B_{t-1}) + (B_{t+1} - B_{t-1}) + (B_{t+2} - B_{t-1}))}$$

where

C = contributions

B = benefits, and

t = first year of recessionary period

There appear to be several difficulties in measuring responsiveness accurately. First, benefit cost rates exhibit frequent fluctuations, even in nonrecessionary periods; thus, tax rates are never in equilibrium. Second, the pattern of benefit increases, e.g., slow buildup versus steep

increase, has an impact on the measured response, except for the one-year measure. For example, for a given cumulative rise in benefits, the three-year measure would be higher for a recessionary period in which the first year had the largest gain than for a period in which the increases started modestly and then gradually became greater. Third, using annual data obscures the precise timing of benefit increases.

Probably as a direct result of these assessment problems, the measured responses exhibited a wide spectrum of values, including many outside the expected range of 0.0 to 1.0. In particular, there were many negative responses. Assuming that these values were due to the measurement problems that have been discussed, rather than representing true responses, the extreme values were eliminated before any analysis was done. We included only those recessionary periods for which all three measures fell within the range of acceptable values (including some negatives for the one-year and two-year measures). This reduced the number of recessionary periods to 236, of which 33 occurred since 1982.

The first analysis examined simple averages of the measures across states, without regard to state size or other factors, for three different time periods. These averages are shown below.

Beginning year	Number of periods	One-year response	Two-year response	Three-year response
1952-1968	88	0.11	0.31	0.43
1969-1981	115	0.14	0.36	0.54
1982-1991	33	0.15	0.34	0.62

Several observations can be made about these averages. First, the 1952-1968 period has the lowest average responsiveness for all three measures. Second, the 1982-1991 period has a clear edge over the 1969-1981 period only for the three-year measure, even falling slightly below it for the two-year measure. Third, the differences in responsiveness are the clearest between the first two time periods, indicating that most of the increase in responsiveness over the years occurred in the 1970s rather than in the 1980s. Finally, the biggest gains in responsiveness over time are in the three-year measure.

The second analysis of the response measures compared the 1990 recession to the 1970 recession. This comparison was made because

the 1990 downturn was closer in size to that in 1970 than to the more recent recessions. A key difference between the 1970 and 1990 recessions, however, was that aggregate reserves as a percentage of total payroll were almost twice as large in 1969 as in 1989 (table 9.1).

Twenty-three states met the various criteria for inclusion in both time periods. Responsiveness measures for the two recessions were compared for each of those states. Among states for which all three response measures were higher in one time period than in the other, nine states were more responsive in 1970 than in 1990, and only seven states were more responsive in 1990 than in 1970.

An interesting point to note is that the two recessions varied significantly in size for many states, which may affect the responsiveness comparison. Of the twelve states where there was both a clear difference in the severity of the two recessions and a clear variation in responsiveness, eight states were more responsive in the milder of the two recessions.

A third analysis was done by fitting regressions to the data to control for factors that might affect the measured responsiveness. The results are shown in table 9.10. Three regressions are displayed, using the one-year, two-year, and three-year response measures, respectively, as dependent variables. The explanatory variables include the reserve ratio at the beginning of the recessionary period, the change in the benefit cost rate for each of the recessionary years, and binary variables for unmeasured state differences. Time effects were measured with two binary variables, one for the period 1969-1992 and one for the period 1982-1992.

One observation based on the results in table 9.10 is that responsiveness is clearly related to reserve levels, with greater responsiveness at lower reserve ratios. The magnitude of the reserve effect does not appear to be very large, however, with the impact of a 1 percentage-point decline in the reserve ratio ranging from a 3 percentage-point increase in the one-year response to a 5 percentage-point increase in the three-year response.

A more important observation is that none of the time effects are significant. The largest coefficients are, in fact, negative, possibly indicating a reduction in tax responsiveness over time after controlling for reserve levels. The conclusion to be drawn from these regressions and the other analyses of response measures is that we have been unable to

show empirically that tax responsiveness has increased since the early 1980s.

**Table 9.10 Regressions on Responsiveness Measures
1952-1992**

	One-year response	Two-year response	Three-year response
Intercept	.495	.789	1.054
Reserve ratio	-.034** (.010)	-.035** (.011)	-.053** (.014)
1969-1992 dummy	-.079 (.047)	-0.47 (.053)	.006 (.067)
1982-1992 dummy	.008 (.048)	-.083 (.053)	-.003 (.067)
First-year BCR increase			.00097* (.00050)
Second-year BCR increase		-.00043** (.00015)	
Third-year BCR increase			-.00140* (.00026)
R ²	.338	.458	.476
Mean of dependent variable	.13	.33	.51

NOTE. All regressions include state dummies. Standard errors are in parentheses. Sample size is 236

BCR = benefit cost rate

*Significant at the .05 level.

**Significant at the .01 level

Flexible Financing in Pennsylvania

A second type of quantitative analysis was to simulate the impact of flexible financing features for a specific state. Pennsylvania enacted UI legislation in 1988 designed to increase the automatic responsiveness of taxes and benefits, thus reducing the potential need for borrowing during recessions. The 1988 law followed earlier solvency legislation of 1980 and 1983 and a history of large-scale borrowing from the U.S. Treasury. Of the thirty-seven state UI programs that borrowed sometime during the 1970s and 1980s, Pennsylvania's \$5.5 billion total was the largest.

Pennsylvania's 1988 solvency measures provide for additional employer taxes, variable employee taxes, and benefit reductions. All adjustments to taxes and benefits are activated by a single trigger. The trigger is calculated as the ratio of the fund balance at the end of the current fiscal year (June 30) to the average benefit outlay for the current and the two previous fiscal years, and the ratio is expressed as a percentage. Thus a trigger value of 100 indicates that the fund balance is equal to one year's worth of benefits.

There are two flexible employer taxes. An employer surcharge is imposed as a flat amount that can assume seven different values. Trigger ratios of 150 or larger cause a tax reduction while the largest surcharge is levied when the trigger falls below 50. Employers are also subject to graduated "additional contributions" when the trigger falls below 95. The trigger-activated employee surcharge has a range of possible values from 0.0 to 0.2 percent of total covered wages. Finally, weekly benefits (for claimants paid more than half of the maximum WBA) are reduced by 5 percent whenever the trigger ratio falls below 50. Many of these flexible financing provisions have effects specified as fixed dollar amounts. Thus as economic growth occurs, their size automatically declines relative to macroeconomic variables such as covered employment and total wages.

The impacts of these automatic provisions were studied using a simulation model that included detailed equations for the determination of UI taxes and UI benefits.³¹ Model simulations were conducted for the years 1991 to 1999. The analysis specified a series of unemployment-inflation scenarios and simulated benefits, taxes, and trust fund balances with the automatic provisions first "off" and then "on." The time paths of unemployment reproduced state unemployment from earlier periods as well as specifying successively higher unemployment rates. Differing inflation rates were also simulated.

Perhaps the most interesting results were yielded by a series of simulations that successively raised the average total unemployment rate by 0.5 percentage point increments. The simulations showed that total benefit outlays grew consistently for successive increments but that additional taxes reached upper limits, causing the fund balance to decline further and cumulative borrowing to increase, despite the presence of the flexible financing provisions. Even when all provisions

were fully turned “on,” benefit outflows exceeded taxes by wide margins.

The distribution of worker and employer sacrifices was found to be sensitive to the assumed rate of inflation.³² At low inflation rates, the burden of the flexible financing provisions was roughly 50-50, with most of the employee burden arising from employee taxes. At higher inflation rates, the employee share rose to more than half, with the employee taxes accounting for most of the increased employee share. This results from the combination of an unlimited tax base for employees and a limitation on employer taxes caused by the fixed tax base. Additional simulations suggested that indexing both the employer tax base and the solvency features (rather than using fixed absolute dollar amounts) would substantially enhance the effectiveness of flexible financing in preventing indebtedness and reducing the scale of insolvency.

Three of the principal findings were straightforward. First, the presence of flexible financing provisions in Pennsylvania reduces the scale of borrowing but does not prevent insolvency. Second, the flexible financing features were more effective in small downturns than in more serious recessions (measured in terms of the increase in the average total unemployment rate for 1991-1999). Finally, inflation weakened the effectiveness of the flexible financing features in the later years of the simulation period.

Implications of Flexible Financing

State Choices

In choosing whether or not to implement a funding strategy that relies on a strong element of flexible financing, it is important for a state to look at the trade-offs involved. The chief argument in favor of flexible financing is that trust fund reserves can be kept low and, at the same time, the risk of borrowing can be minimized. The negative aspects of large balances have become more widely recognized in recent years. First, states may perceive that the opportunity cost of holding balances exceeds the interest earnings on reserves. For any

given level of benefit payouts, a state may prefer to hold smaller trust fund balances now than in the past on the argument that the rate of return is higher for funds held by employers.³³ Second, large trust fund balances may increase pressures for benefit liberalization or for diversions of UI taxes to other purposes. Either use of the trust fund is easier to do politically if the fund balance is perceived to be larger than necessary.³⁴

It is clear that, in the aggregate, states now have smaller desired trust fund levels than in the past. Although prerecession balances in 1989 were high relative to those of the preceding decade, as a percent of payroll they were only about half of 1969 balances (table 9.1). This is an appropriate comparison because 1969 and 1989 were both at the end of long periods of economic growth, presumably allowing reserves to be accumulated to desired levels.

A second impetus towards flexible financing is that, even if a state chooses to have a low trust fund balance, there are incentives to avoid or minimize borrowing. Since 1982, interest has been charged on loans (except those repaid the same year they are made). This interest must be paid from sources outside the trust fund, either through a separate tax or from state general revenues. A further disincentive is the automatic repayment feature of the FUTA tax, which is activated after two years of borrowing. This tax repays the loan via a flat surcharge on the low federal tax base, rather than through the experience-rated state UI tax.

The chief argument against flexible financing is that the timing of benefit decreases and tax increases hurts both claimants and employers. Claimants are faced with reduced benefits at a time when their need is the greatest. Businesses are faced with tax increases before they have fully recovered from the recession.

Two additional arguments against relying on flexible financing can also be noted. First, a state may implement flexible financing features, but the provisions may not act with enough strength to prevent insolvency. Flexible tax features, for example, simply may not generate sufficient added revenues in a timely manner to counteract the effects of a serious recession. Second, there is a question of the presence of enough political will to let strong flexible features operate as intended. When the time comes, the state executive and/or legislature may decide to nullify the automatic response to satisfy preferences of the claimant

and/or business community. Absent a large trust fund reserve, the result could be that the state needs large-scale loans.

National Perspective

While flexible financing may be an attractive option for some states, widespread use of flexible financing would be a cause for concern from a national economic perspective. The main problem with flexible financing from this viewpoint is that it reduces the countercyclical performance of the UI system. One of the original objectives of the UI system was to act as an automatic stabilizer of the macro economy, primarily through maintenance of consumer purchasing power. Flexible benefit provisions directly reduce this stabilization effect. Taxes that respond too quickly also may curtail business spending at the wrong time and adversely affect the recovery. The stabilization role of UI is already diminished because of the long-term decline in the proportion of the unemployed who receive benefits. Increased use of flexible financing would further erode this position.

During the 1950s, when UI trust fund balances were much greater, there was a good deal of debate and experimentation on ways to make tax rates more countercyclical. In the past ten or fifteen years, with relatively low trust fund balances, there has been considerable state legislative movement in the opposite direction, towards quicker recovery of benefit costs in the form of flexible financing features. It appears, however, that the shift towards flexible financing has not been of sufficient quantitative importance to have had a significant effect.

Summary and Conclusions

This chapter has reviewed the history of state UI reserves and borrowing as well as recent trends. A key finding is that states have been slow to rebuild their trust funds since the recessionary trough of 1992. At the observed fund-building rates of 1993 and 1994, it appears that states will enter the next recession with less adequate reserves than they had prior to the 1990-1992 recession.

We have examined flexible financing. As documented, many states have added flexible financing features to their UI laws in recent years, consistent with the common perception that pay-as-you-go financing has increased. We estimated the quantitative effect of flexible financing provisions and found that, in the aggregate, the impact of these provisions is rather small.

One finding was common to two separate investigations of flexible financing. First, for the twelve states for which responsiveness in both the 1970 and 1990 recessions could be compared, eight showed greater responsiveness in the milder of the two downturns. Second, in the simulation analysis of Pennsylvania's 1988 law, its flexible financing features were found to be more effective in countering the effects of mild recessions. Thus, as currently structured, flexible financing qualities may be more effective during mild as opposed to severe downturns. If this finding is corroborated by other research, it may point to a need to enact solvency taxes and other flexible features that have more "bite" than those presently in place. Otherwise, the inadequacy of such mechanisms for maintaining solvency would be discovered at the most inappropriate time, i.e., during a major recession.

Several conclusions can be drawn from the analysis. First, state UI trust funds are now more healthy than at the end of the 1970s and start of the early 1980s, but they are not so large that the risks of insolvency and debt are merely matters of historical interest. The fact that the borrowing during 1990-1994 was so modest is partly attributable to the mild nature of the recession. Second, there is a continuing need for states to maintain reserves to avert large-scale borrowing during a future slowdown. We note and express concern for the comparatively modest pace of trust fund rebuilding during 1993-1994. It appears likely that reserves available for the next recession will be less adequate than they were prior to the 1990-1992 recession. Third, while flexible financing provisions are now more prevalent and possibly of greater significance than they were twenty years ago, our empirical results did not suggest that the change has been of large quantitative importance. Fourth, the speed and strength of automatic financing responses appear inadequate to the needs that would arise in a future downturn if its depth and severity equaled the average of the eight post-World War II recessions.

NOTES

Any opinions expressed in this chapter are solely those of the authors and do not necessarily reflect the positions of the U.S. Department of Labor or the Urban Institute

1 See chapter 12 in Haber and Murray (1966).

2 The term "net reserves" refers to total state reserves less outstanding loans from the U.S. Treasury at the end of the indicated years. The term "aggregate payrolls" refers to taxable employees only and does not reflect employers who finance benefit payments on a reimbursable basis.

3 Connecticut and New York also borrowed small amounts during the first six months of 1995. The definition of a "large" loan, as the term is used in this chapter, is given shortly.

4 Thus, table 9.1 shows reserve ratios for the entire United States for nine individual years

5. Two criticisms are frequently made. First, the highest cost period is often so far in the past, e.g., January-December 1964 for South Dakota, that it may no longer be relevant as an indicator of risk. Second, because the multiple is a static concept, it does not adequately recognize the dynamic response of taxes when trust funds are being depleted. A fast response of taxes can allow a state to function successfully with a lower trust fund reserve. The validity of the second argument motivates this chapter.

6. See chapters 2 and 5 and appendix E in Advisory Council on Unemployment Compensation (1995)

7. The recommendations are numbers 2-6 in chapter 2 of the Advisory Council on Unemployment Compensation report. Several of the ACUC recommendations for providing financial rewards to states that build large reserves previously appeared in a book by one of the authors. See chapter 6, pages 145-146, in Vroman (1990)

8. Table 9.2 displays similar information to that previously displayed in table 9.1, but for a shorter time period and with attention to state-level as well as to aggregate detail

9. The single years within each period used as the numerators for the borrowing totals were respectively 1975, 1984, and 1991

10. Regression analysis of the probability of a state needing a loan during a recession consistently shows a negative and highly significant coefficient on the prerecession HCM

11. Clearly, the passage of a longer period of time can affect cumulative measures of borrowing activities. However, of the 31 programs that needed loans between 1980 and 1987, twenty-nine borrowed between 1980 and 1983. Because the 1980-1987 borrowing was heavily concentrated early in that time span, the 1980-1987 and 1990-1994 periods are more comparable than might initially be imagined

12. There are other conditions for interest avoidance, e.g., no borrowing between October 1 and December 31. Also, if a state does owe interest, repayment of these financing charges can be deferred for up to 15 months following the September 30 due date, with additional interest accruing on the unpaid balance.

13. Debt repayment behavior also changed as a result of the Social Security Amendments of 1983 that gave debtor states strong financial incentives to improve solvency and repay debt through a combination of benefit reductions and tax increases. Three distinct financial incentives were offered: deferred payment of interest, lower interest rates, and reduced FUTA penalty taxes.

14. One summary of the changes in state repayment patterns during the 1980s is given in chapter 1, tables 1.5 and 1.6, of Vroman (1990)

15. Specific details of the benefit reductions enacted by states with the biggest financing problems in the early 1980s are provided in chapter 2 of Vroman (1986)

16. The concentration of reserve losses among a few big states is not unique to the 1990-1992 downturn. During the recession of the early 1980s, four large industrial states (Illinois, Michigan, Ohio, and Pennsylvania) accounted for about 80 percent of total borrowing.

17. A partial list would include. (1) state legislative actions to improve solvency, (2) automatic changes in taxes and benefit payments activated by reductions in trust fund balances, and (3) the size and persistence of the increase in unemployment (a proxy for the depth of the recession in the state).

18. The recession might be characterized as bicoastal simply because California is so large relative to other states on the West Coast. Note in table 9.4B that for the other four states in the Pacific division the ratio of unemployment rates ranges from low to high as follows: Washington (0.937), Alaska (1.005), Hawaii (1.058), and Oregon (1.070). None of these four states had its unemployment rate ratio increase by even half of the national average increase.

19. The other four are California, Mississippi, Missouri, and Nevada.

20. Because the recent recession was comparatively mild, it should be kept in mind that larger reductions in HCMs would take place during a more serious downturn.

21. Note in the bottom panel of table 9.5 that ten states increased their HCMs during the 1979-1983 period. While we have not attempted to explain this pattern, it should be observed that several states with low and negative balances enacted solvency legislation during 1982 and 1983 with the specific objective of reducing indebtedness. State-level legislation contributed to these increases in reserves.

22. EUC benefits exceeded \$250 million in every month between December 1991 and April 1994. Payments exceeded \$1.0 billion in eighteen of these twenty-nine months. During 1992 and 1993, annual EUC benefits totaled more than half of regular UI benefits.

23. Connecticut was the only state to finance its 1991-1994 borrowing with state-issued bonds. The state's motivation was to save on interest costs since state debt is tax-free, and interest rates are lower than for U.S. Treasury debt. During the mid-1980s, Louisiana and West Virginia also used this method to repay Title XII debts. See Vroman (1993) for an analysis of state bond issuance and a comparison with traditional borrowing from the U.S. Treasury.

24. Minnesota provides for a higher maximum benefit amount when the trust fund balance falls. Thus, its flexible benefit provision is not a flexible financing provision in the sense that it does not contribute to trust fund solvency.

25. The three elements of the Illinois trigger mechanism are the level of the trust fund, average employer tax rates, and the growth in first payments.

26. Experience-rating systems are of two general types: stock-based and flow-based. Stock-based systems (reserve ratio systems) use the employer's account balance (measured relative to either total or taxable payrolls) to gauge experience and to set individual employer tax rates. Flow-based systems (benefit ratio, benefit wage ratio, and payroll decline systems) use measures of benefit payouts and/or payrolls of liable employers to set individual employer tax rates. In both types of systems, the indicator of experience causes taxes to increase following recession-related benefit payouts.

27. Reserve ratio calculations take into account the entire experience (contributions minus benefits charged) since the employer was in existence, while benefit ratio formulation uses only the last three years of benefits.

28. The other states are Alaska, Idaho, Iowa, Kansas, Vermont, and Washington.

29. How much the size of the tax base affects responsiveness depends also on the number of payroll years that reserve ratio and benefit ratio states use to measure their experience rate. Interestingly, adding years to the denominator of the reserve ratio will increase responsiveness, while the opposite is true for a benefit ratio calculation. During recessions, taxable payroll for some employers decreases quickly, pushing the reserve ratio up and thus causing a lowering of the tax

rate. In a benefit ratio calculation, the declining wages tend to increase the tax rate on employers. Previously, six states used only the last year of taxable wages in the denominator of the reserve ratio calculation. This number had declined to three states in 1995: Massachusetts, South Carolina, and Wisconsin.

30. Among these are a short lag between computation date and effective date of new tax rates, narrow intervals between tax schedule triggers and between tax rate triggers within schedules, trust-fund-activated employee taxes, not crediting solvency taxes to employer reserve accounts, and not limiting year-to-year rate or schedule changes.

31. See Worden and Vroman (1991). Appendix A of their paper shows the model's equations.

32. Worker sacrifices have two components: increased employee taxes and reduced benefits to claimants.

33. We do not know of research to formalize the rates of return calculations that support arguments for maintaining funds with employers as opposed to holding reserves in trust funds. Certainly, arguments to lower taxes on employers would be weakened if trust fund reserves were invested in assets with higher rates of return than U.S. government debt.

34. Again, rhetoric and casual observation provide much of the basis for this assertion. It would be useful to investigate the issue within a formal statistical (regression) framework.

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